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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/030,109	03/20/2002	Mouafak Arif Zaher	P67369USO	2125

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JACOBSON HOLMAN PLLC  
400 SEVENTH STREET N.W.  
SUITE 600  
WASHINGTON, DC 20004

EXAMINER

EDGAR, RICHARD A

ART UNIT PAPER NUMBER

3745

DATE MAILED: 08/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/030,109

Applicant(s)

ZAHER, MOUAFIAK ARIF

Examiner

Richard Edgar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on an RCE filed 12 July 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10 and 13-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10 and 13-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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### ***Response to Arguments***

Applicant's arguments, see page 8, 2<sup>nd</sup> paragraph, filed 12 July 2004, with respect to the rejection(s) of claim(s) 1-8, 10 and 12-19 under 35 USC §103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art references.

### ***Claim Objections***

Claim 6 is objected to because of the following informalities: In line 4, the superfluous "the" should be deleted. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 13-15, 19 are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent No. 4,027,993 (Wolff hereinafter).

Wolff discloses a pumping arrangement in Figures 1-4 for pumping a pre-established multi-phase fluid flow, said arrangement comprising:

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a centrifugal pump which has engaged thereto, a fluid inlet pipe 94 connected in fluid communication with a multiphase fluid source and an outlet pipe 76 and said centrifugal pump being driven by a power providing means (motor),

a fluid communication providing means 98 to provide a communication of fluid between said outlet pipe 76 and said inlet pipe 94, said fluid communication being such as to provide a fluid connection between said outlet pipe and said inlet pipe to deliver fluid of a higher pressure from said outlet pipe to said inlet pipe upstream of said centrifugal pump 70, when said centrifugal pump is in operation,

wherein said centrifugal pump includes an impeller which has a plurality of vanes configured to define there between one of three and four impeller vanes separated passageways (the impeller is shown as having 12 vanes and 12 vane separated passageways).

The arrangement is for pumping a fluid of gaseous and liquid mix (see abstract).

The power providing means is an electric motor (col. 9, line 13).

The fluid connection is a bleed line 98 to bleed a portion of the fluid from the outlet pipe 76 to the inlet pipe 94.

The fluid connection between the outlet pipe and inlet pipe includes at least one nozzle 92 at the inlet pipe 94 for injection of bleed fluid into the inlet pipe. The at least one nozzle provides, an increase in velocity head to the bleed flow prior to the point of injection as a result of a reduction in the flow area of the at least one nozzle (see Figure 3).

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Wolff, similarly, discloses a method of pumping pre-established multi-phase fluid flow, wherein a centrifugal pump 70 is provided which has engaged thereto a fluid inlet pipe 94 connected in communication with a multiphase fluid source and an outlet pipe 76 through which said fluid is delivered,

a power providing means (motor) is provided which rotates the impeller, and

a portion of fluid from the outlet pipe 76 is bled and delivered to a fluid connection providing means 98 to the inlet pipe 94 to be injected into the main multiphase fluid flow into the centrifugal pump, wherein the centrifugal pump is provided with an impeller which has a plurality of vanes configured to define there between one of three and four impeller vane separated passageways (Wolff's 12 vanes and passageways comprises one of 3 and 4 vanes and passageways).

The method further includes providing a flow control means 92 in the fluid connection providing means.

The method further includes the provision of a means 100 to measure the volumetric rate and head of pressure of delivered fluid.

Wolff teaches a pumping arrangement in a ducted multi-phase fluid flow system, said arrangement comprising:

a centrifugal pump which has engaged thereto a fluid inlet pipe 60 connected in fluid communication with a multi-phase fluid source and an outlet pipe 48 and driven by a power providing means 26,

a fluid communication 30 providing means to provide a communication of fluid between the outlet pipe and the inlet pipe, said fluid communication means providing a fluid connection between the outlet pipe and the inlet pipe to deliver fluid of a higher pressure from the outlet pipe to the inlet pipe when the centrifugal pump is in operation,

wherein the centrifugal pump is provided with an impeller 24 which has a plurality of vanes configured to define therebetween one of three and four impeller vane separated passageways (see Figure 2).

Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent No. 4,027,993 (Wolff hereinafter) as evidenced by United States Patent No. 5,609,468 (Burgess hereinafter).

Wolff shows a centrifugal impeller having 12 vanes and 12 vane passageways (see figures 2 and 4) to pump a fluid comprising a liquid and a gas. The inherent optimal number of vanes of a centrifugal impeller operating at peak efficiency when pumping liquid only has not been disclosed in the Wolff reference.

Burgess shows a centrifugal impeller having 16 vanes and 16 passageways.

Therefore, in order for Wolff to utilize 12 vanes and 12 vane passageways in the centrifugal impeller, vanes from a liquid only impeller must inherently be removed.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7, 8 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent No. 4,027,993 (Wolff hereinafter) in view of UK Patent Application GB 2,058,218 A (Holzhüter hereinafter).

Wolff shows a nozzle 92 used to introduce a fluid into an impeller flowpath, but does not show at least two nozzles which are split from the fluid source, wherein the nozzles are directed in a tangential direction, co-rotary with the impeller rotation.

Holzhüter disclose a bleed line 5 for a centrifugal impeller wherein the bleed line is split so that a plurality of nozzles are arranged around the impeller inlet pipe in a tangential direction, co-rotary to the impellers rotational direction for the purpose of reducing cavitation of the impeller (see abstract).

Since Wolff shows the use of a nozzle to introduce fluid upstream of the impeller and Holzhüter teaches that there should be circumferentially arranged nozzles facing in a tangential direction, co-rotary to the impellers direction of rotation, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the fluid communication means of Wolff so that it splits into at least two flow paths terminating in nozzles spaced circumferentially about the inlet pipe and facing a tangential direction that is co-rotary to the impellers direction, as taught by Holzhüter for the purpose of reducing cavitation of the impeller.

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***Cited Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. United States Patent Nos. 1,382,665, 3,238,534, 3,286,639, 3,381,618 and 4,964,783 are each cited for having a flow connection providing means between a centrifugal pump outlet and inlet.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Edgar whose telephone number is (703) 305-0050. The examiner can normally be reached on Tuesday-Friday's 6:30 am until 5:00 pm EST.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on (703) 308-1044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Richard Edgar  
Examiner  
Art Unit 3745

RE

  
JUSTINE R. YU  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3700

8/20/04